

US Serial No. 10/075,106

Page 4

R E M A R K S

Claim 3 was objected to under 37 CFR 1.75(c) as being in improper dependent form. Claim 3 has been amended to delete the objected-to language and to insert new limitations not called for in independent claim 1. The amendment is believed to overcome the objection.

Claim 1 was rejected under 35 USC 112, 2nd paragraph, as being indefinite on the basis that independent claim 1 includes the phrase "light metal." Applicants have amended independent claim 1 to delete the limitation "light" from the claim, and this amendment is believed to overcome the rejection under 35 USC 112.

Claims 1-9 were rejected under 35 USC 103 as being unpatentable over the "admitted prior art" in view of the Grylls et al '792 patent, the Lindblom '678 patent, and Rabiei et al. However, applicants' amendments have rendered these rejections moot.

None of the references relied on by the Examiner in the rejections under 35 USC 103, either individually or in combination, teach or suggest that there is a connection between the amount of oversupply of oxygen above the stoichiometric amount required for combustion with a gaseous fuel and the deposition rate of molten metal onto the cylinder wall. None of the references of record suggest that an oversupply of oxygen can be sufficient to increase the deposition rate of molten metal on the cylinder wall by more than twofold as called for in independent claim 1. None of the references of record, individually or in combination, suggest or teach that the oversupply of oxygen can be sufficient to increase the deposition rate of molten metal on the cylinder wall by more than twofold utilizing a gaseous fuel comprising at least one of methane and propane as called for in newly-added claims 12 and 13. See the instant application at the paragraph bridging pages 6 and 7. Furthermore, none of the references of record suggest, either individually or in combination, reacting excess oxygen with the feed wire material to combust the feed wire material as a source of solid fuel to provide a supplemental source of heat sufficient with low heat content and inexpensive fuel such as methane and propane and that such would be sufficient to increase the deposition rate of the molten metal on the cylinder wall by more than twofold as called for in newly-added claims 12 and 13. None of the references suggest oversupplying oxygen to react with the ferrous-based feed wire producing a supplemental source of heat in the presence of methane or

US Serial No. 10/075,106

Page 5

propane fuel and that such would be sufficient to spray molten feed wire material onto the cylinder wall surface as called for in claim 14.

None of the references suggest that the ferrous-based coating may include an addition of at least one of yttrium, calcium, magnesium, titanium, zirconium, hafnium, cerium and lanthanum and still achieve a two-fold increase in deposit rate compared to oxygen supplied in a stoichiometric amount to the fuel.

In fact, Grylls et al teach away from the claimed invention by noting disadvantages of excess oxygen and suggesting benefit of operating with excess fuel (see column 7, lines 39-50). Rabiei et al is silent on the amount of oxygen used. Lindblom does not overcome the deficiencies of Grylls et al and Rabiei et al.

Claims 1-9 were provisionally rejected under the judicially-created doctrine of obvious-type double patenting as being unpatentable over claims 1-3 and 5-10 of copending application Serial No. 10/022,322 in view of Rabiei et al. The Examiner has taken the position that although the claims are not identical, they are not patentably distinct from each other because the claims of the 10/022,322 application provide all of the requirements of the claims of the present application except for the "additive material," but the Examiner maintains that the addition of the "additive material" would have been obvious in view of Rabiei et al. Applicants maintain the claims of each application are not obvious in view of each other and that there is no suggestion in the prior art to add or subtract components to arrive at the claims of the other application. Further, there is no suggestion in the prior art that such components can be added or subtracted from the claims nor that a person of ordinary skill in the art would have a reasonable expectation of success despite the unpredictability of the art. There is no suggestion that the oversupply of oxygen could be sufficient to increase the deposition rate of the molten metal on the cylinder wall by more than twofold with or without the additional components of the claims in the corresponding cases. Thus, the claims of the two patent applications in question would not be obvious in view of each other. Withdrawal of the obvious-type double patenting rejection is respectfully requested.

In view of the above amendments and remarks, applicants respectfully request reconsideration and allowance of claims 1-14 now in the case.

US Serial No. 10/075,106
Page 6

Please charge the fee for a one-month extension of time to extend the time for response from March 9, 2003 to April 9, 2003, as well as any other fees which might be due, to General Motors Deposit Account No. 07-0960.

Respectfully submitted,



Cary W. Brooks - Attorney
Reg. No. 33,361
Telephone: 313-665-4717

FAX RECEIVED

MAR 31 2003

GROUP 1700

CWB:plul

US Serial No. 10/075,106

Page 7

VERSION WITH MARKINGS TO SHOW CHANGES MADE IN CLAIMS

Amend claims 1 and 2 as follows:

1. (Amended) A method of thermally spray coating a cylinder wall of a [light] metal engine block, said method comprising:

providing a high velocity oxygen fuel (HVOF) device;

advancing a feed wire of ferrous-based material into the HVOF device to locate a tip end of the wire in a high temperature zone of the HVOF device;

supplying a high velocity jet flow of gaseous fuel to the high temperature zone of the HVOF device;

supplying a high velocity jet flow of oxygen to the high temperature zone of the HVOF device and combusting the oxygen and fuel to generate sufficient heat in the high temperature zone to melt the tip end of the feed wire in the high temperature zone and spraying the molten feed wire material onto the cylinder wall surface of the engine block to form a ferrous-based coating thereon; and

controlling the flow of the oxygen relative to the flow of the gaseous fuel to provide an oversupply of oxygen in excess of the oxygen required for stoichiometric combustion of the gaseous fuel, and reacting the excess oxygen with an associated fraction of the wire feed material in the high temperature zone to combust the associated fraction of the wire feed material as a source of solid fuel to provide a supplemental source of heat to the high temperature zone of the HVOF device; and wherein the ferrous-based coating includes an addition of at least one [additive material selected from the group consisting] of: yttrium, calcium, magnesium, titanium, zirconium, hafnium, cerium, and lanthanum; and wherein the amount of oversupply of oxygen is sufficient to increase the deposition rate of the molten metal on the cylinder wall by more than two-fold than that deposited when oxygen is supplied at that required for stoichiometric combustion of the gaseous fuel.

2. (Amended) The method of claim 1 wherein the oxygen is oversupplied in an amount [about] of at least twice that needed for stoichiometric combustion with the fuel.